

REMARKS

In response to the Office Action of June 1, 2007, Applicant has amended claims 1, 17, and 77, and canceled claims 18-19. Accordingly, claims 1, 3-17, 20-24, 49, 70, 73-74, 77, and 80-83 are pending, with claims 1 and 77 in independent form.

Claims 1, 3-11, 17-19, 49, and 77 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Silberberg et al. (U.S. Patent No. 6,327,068, "Silberberg"). In addition, claims 12-16, 20-24, 70, and 73-74 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over a combination of Silberberg and Wefers et al. (U.S. Patent No. 5,719,650, "Wefers"), and claims 80-83 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over a combination of Silberberg and Sharp et al. (U.S. Patent No. 6,273,571, "Sharp").

As amended, claims 1 and 77 include the limitations of previously pending claim 19. Accordingly, no new matter is introduced via these amendments. With regard to previous claim 19, the Examiner stated that "Silberberg discloses an adjustment to phase" (Action at page 3). Applicant respectfully points out that previous claim 19, and now claims 1 and 77, do not require adjustments to the phase. Instead, claims 1 and 77 require adjustments to the state of polarization of the frequency components, and further that the adjustments are made "to reduce distortion of the optical signal by the frequency-dependent polarization effects." Neither Silberberg nor Wefers, alone or in combination, discloses the subject matter of amended claims 1 and 77.

Silberberg does not disclose "adjustments to the polarization transfer matrix [that] are selected to cause independent adjustments to the state of polarization (SOP) of each of multiple subsets of the spatially dispersed frequency components." Instead, Silberberg makes clear that his spatial light modulator (SLM) is configured to adjust amplitudes and phases of frequency components. Silberberg states that his SLM has the ability perform "almost arbitrary spectral phase and/or amplitude filtering" (Silberberg, col. 2, line 55). There is no disclosure in Silberberg that relates to adjustments to the state of polarization of dispersed frequency components. In fact, Silberberg's input and output optical fields have the same polarization.

Silberberg employs “polarizers acting as half wave plates on either side of the liquid crystal elements, in order to ensure the correct polarization of the light for the most effective operation both of the gratings and of the liquid crystal element itself” (Silberberg, col. 5, lines 25-29). Thus, Silberberg fails to disclose “adjustments to the polarization transfer matrix [that] are selected to cause independent adjustments to the state of polarization (SOP) of each of multiple subsets of the spatially dispersed frequency components,” as required by amended claims 1 and 77.

Furthermore, claims 1 and 77 require adjusting a polarization transfer matrix “to reduce distortion of the optical signal by the frequency-dependent polarization effects,” and to reduce distortions due to frequency-dependent polarization effects, information about the frequency-dependent polarization effects should be available when the optical signal is incident on the SLM. However, as discussed above, Silberberg uses polarizing components to polarize the input optical field in a particular direction prior to the optical field entering the SLM. As a result, the information required to reduce distortions arising from frequency-dependent polarization effects is filtered out by his polarizing components and lost. Without this information, Silberberg's system cannot reduce distortions of the optical signal that arise from frequency-dependent polarization effects. Thus, Silberberg's system is not configured “to reduce distortion of the optical signal by the frequency-dependent polarization effects,” as required by amended claims 1 and 77.

Wefers does not cure Silberberg's deficiencies in this regard. While Wefers does disclose modulating spatially separated frequency components of an input optical beam, Wefers takes great care to ensure that the input beam has a particular, well-defined polarization state. For example, Wefers discloses that for an input grating 16a having 1800 lines/mm, the diffraction efficiency for the x-polarization component of an input light beam is about 80% and the diffraction efficiency for the y-polarization component is < 1% (see, e.g., Wefers, col. 6, lines 45-48). Further, Wefers discloses the use of a polarizing optic 34a (see, e.g., Fig. 5 of Wefers) between input grating 16a and the first liquid crystal modulator 28a. With regard to polarizing

optics such as optic 34a, Wefers states that “[p]olarization optics ... should be carefully chosen to polarize the input pulse with a high (e.g., 100:1) extinction ratio” (Wefers, col. 6, lines 35-38).

Wefers states that incident beam 14 is already “polarized along the x axis” (Wefers, col. 5, line 54). The combination of input grating 16a and polarizing optic 34a further removes portions of incident beam 14 that are not polarized along the x axis, resulting in a well-defined input polarization state for light that is incident upon modulator 12. In other words, like Silberberg, Wefers uses polarizing components to polarize the input optical field in a particular direction prior to the optical field entering the SLM. And as in Silberberg’s system, Wefers’ system filters out polarization components of the incident beam that are oriented in directions other than the preferred direction (e.g., the x direction).

As a result, a significant portion of the information required to reduce distortions arising from frequency-dependent polarization effects is filtered out by Wefers’ system and lost. Without this information, Wefers’ system cannot reduce distortions of the optical signal that arise from frequency-dependent polarization effects. Wefers’ system, therefore, is not configured “to reduce distortion of the optical signal by the frequency-dependent polarization effects,” as required by amended claims 1 and 77.

In both Silberberg and Wefers, polarization components of the input optical signal that are oriented in a preferred direction are retained and modulated, while the other polarization components – which include information that is required to correct for the frequency-dependent polarization effects – are filtered out or otherwise altered, and the information about these components is lost. As a result, neither Silberberg nor Wefers discloses that the polarization transfer matrix of an SLM is adjusted “to reduce the distortion of the optical signal by the frequency-dependent polarization effects,” as required by amended claims 1 and 77.

Accordingly, Applicant submits that amended claims 1 and 77 are patentable over both Silberberg and Wefers, alone or in combination, and respectfully requests reconsideration and withdrawal of the rejections of these claims.

Claim 17 has been amended to bring this claim into conformance with the language of amended claim 1. No new matter is introduced via the amendment to claim 17.

Claims 3-17, 20-24, 49, 70, 73-74, and 80-83 each depend from one of claims 1 and 77, and are therefore patentable for at least the same reasons. Accordingly, Applicant requests reconsideration and withdrawal of the rejections of these claims also.

In view of the foregoing, Applicants ask that the application be allowed.

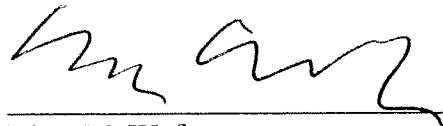
Canceled claims, if any, have been canceled without prejudice or disclaimer. Any circumstance in which Applicant has: (a) addressed certain comments of the Examiner does not mean that Applicant concedes other comments of the Examiner; (b) made arguments for the patentability of some claims does not mean that there are not other good reasons for patentability of those claims and other claims; or (c) amended or canceled a claim does not mean that Applicant concedes any of the Examiner's positions with respect to that claim or other claims.

The fees in the amount of \$230 for the Petition for Extension of Time fee are being paid concurrently on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to deposit account 06-1050, referencing Attorney Docket No. 12818-003001.

Respectfully submitted,

Date: _____

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